XTP Extenders

XTP T HDMI
XTP R HDMI

XTP HDMI Transmitter and Receiver

Extron Electronics

INTERFACING, SWITCHING AND CONTROL

Safety Instructions • English

WARNING: This symbol, ⚡, when used on the product, is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

ATTENTION: This symbol, ⚠, when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, **www.extron.com**.

Instructions de sécurité • Français

AVERTISSEMENT: Ce pictogramme, ⚡, lorsqu'il est utilisé sur le produit, signale à l'utilisateur la présence à l'intérieur du boîtier du produit d'une tension électrique dangereuse susceptible de provoquer un choc électrique.

ATTENTION: Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec le matériel.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, **www.extron.fr**.

Sicherheitsanweisungen • Deutsch

WARNUNG: Dieses Symbol ⚡ auf dem Produkt soll den Benutzer darauf aufmerksam machen, dass im Inneren des Gehäuses dieses Produktes gefährliche Spannungen herrschen, die nicht isoliert sind und die einen elektrischen Schlag verursachen können.

VORSICHT: Dieses Symbol ⚠ auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Weitere Informationen über die Sicherheitsrichtlinien, Produkthandhabung, EMI/EMF-Kompatibilität, Zugänglichkeit und verwandte Themen finden Sie in den Extron-Richtlinien für Sicherheit und Handhabung (Artikelnummer 68-290-01) auf der Extron-Website, **www.extron.de**.

Instrucciones de seguridad • Español

ADVERTENCIA: Este símbolo, ⚡, cuando se utiliza en el producto, avisa al usuario de la presencia de voltaje peligroso sin aislar dentro del producto, lo que puede representar un riesgo de descarga eléctrica.

ATENCIÓN: Este símbolo, ⚠, cuando se utiliza en el producto, avisa al usuario de la presencia de importantes instrucciones de uso y mantenimiento recogidas en la documentación proporcionada con el equipo.

Para obtener información sobre directrices de seguridad, cumplimiento de normativas, compatibilidad electromagnética, accesibilidad y temas relacionados, consulte la Guía de cumplimiento de normativas y seguridad de Extron, referencia 68-290-01, en el sitio Web de Extron, **www.extron.es**.

Chinese Simplified（简体中文）

警告: ⚡产品上的这个标志意在警告用户该产品机壳内有暴露的危险电压, 有触电危险。

注意: ⚠ 产品上的这个标志意在提示用户设备随附的用户手册中有重要的操作和维护(维修) 说明。

关于我们产品的安全指南、遵循的规范、EMI/EMF 的兼容性、无障碍使用的特性等相关内容，敬请访问 Extron 网站 **www.extron.cn**，参见 Extron 安全规范指南，产品编号 68-290-01。

Chinese Traditional（繁體中文）

警告: ⚡若產品上使用此符號,是為了提醒使用者,產品機殼內存在著可能會導致觸電之風險的未絕緣危險電壓。

注意 ⚠ 若產品上使用此符號,是為了提醒使用者。

有關安全性指導方針、法規遵守、EMI/EMF 相容性、存取範圍和相關主題的詳細資訊,請瀏覽 Extron 網站：**www.extron.cn**,然後參閱《Extron 安全性與法規遵守手冊》,準則編號 68-290-01 。

Japanese

警告: この記号 ⚡ が製品上に表示されている場合は、筐体内に絶縁されていない高電圧が流れ、感電の危険があることを示しています。

注意: この記号 ⚠ が製品上に表示されている場合は、本機の取扱説明書に記載されている重要な操作と保守(整備)の指示についてユーザーの**注意**を喚起するものです。

安全上のご注意、法規厳守、EMI/EMF適合性、その他の関連項目については、エクストロンのウェブサイト**www.extron.jp**より『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01) をご覧ください。

Korean

경고: 이 기호 ⚡, 가 제품에 사용될 경우, 제품의 인클로저 내에 있는 접지되지 않은 위험한 전류로 인해 사용자가 감전될 위험이 있음을 경고합니다.

주의: 이 기호 ⚠, 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(**www.extron.co.kr**)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference; the user must correct the interference at his own expense.

> **ATTENTION:** The Twisted Pair Extension technology works with unshielded twisted pair (UTP) or shielded twisted pair (STP) cables; but, to ensure FCC Class A and CE compliance, STP cables and STP connectors are required.
>
> For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the "**Extron Safety and Regulatory Compliance Guide**" on the Extron website.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

> **WARNING:** A warning indicates a situation that has the potential to result in death or severe injury.

> **ATTENTION:** Attention indicates a situation that may damage or destroy the product or associated equipment.

> **NOTE:** A note draws attention to important information.

> **TIP:** A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
```

`Esc` `X1` * `X17` * `X20` * `X23` * `X21` CE ⬅

> **NOTE:** For commands and examples of computer or device responses mentioned in this guide, the character "Ø" is used for the number zero and "0" represents the capital letter "o."

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx –t
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Specifications Availability

Product specification are available on the Extron website, **www.extron.com**.

Contents

Introduction

This section contains general information about this guide and the Extron XTP T HDMI transmitter and XTP R HDMI receiver. Topics in this section include:

- **About This Guide**
- **About the XTP HDMI Transmitter and Receiver**
- **Key Features**

About This Guide

This guide contains installation, operation, control, and reference information for the XTP T HDMI transmitter and the XTP R HDMI receiver.

In this guide, the terms "transmitter," "XTP T HDMI," and "XTP HDMI transmitter" are used interchangeably to refer to the XTP T HDMI transmitter. The terms "receiver," "XTP R HDMI," and "XTP HDMI receiver" are used interchangeably to refer to the XTP R HDMI receiver.

About the XTP HDMI Transmitter and Receiver

Both the XTP T HDMI transmitter and XTP R HDMI receiver send or receive video, audio, bidirectional RS-232 and IR, and Ethernet over a single twisted pair cable. They are HDCP-compliant and support 1080p/60 Deep Color and 1920x1200 signals, and embedded HD lossless audio formats. They work with Extron XTP devices in matrix or point-to-point applications for signal distribution and long-distance transmission (up to 330 feet) between remote endpoints, using shielded or unshielded CATx cable.

They can be powered locally or remotely through an Extron XTP Power Injector or XTP matrix switcher.

Both devices can be controlled through Extron Simple Instruction Set (SIS) or the XTP Configuration Software (see **SIS Configuration and Control** on page 16 or **XTP System Configuration Software** on page 23).

The following diagram shows some ways the XTP T HDMI and the XTP R HDMI can be integrated in an XTP matrix application.
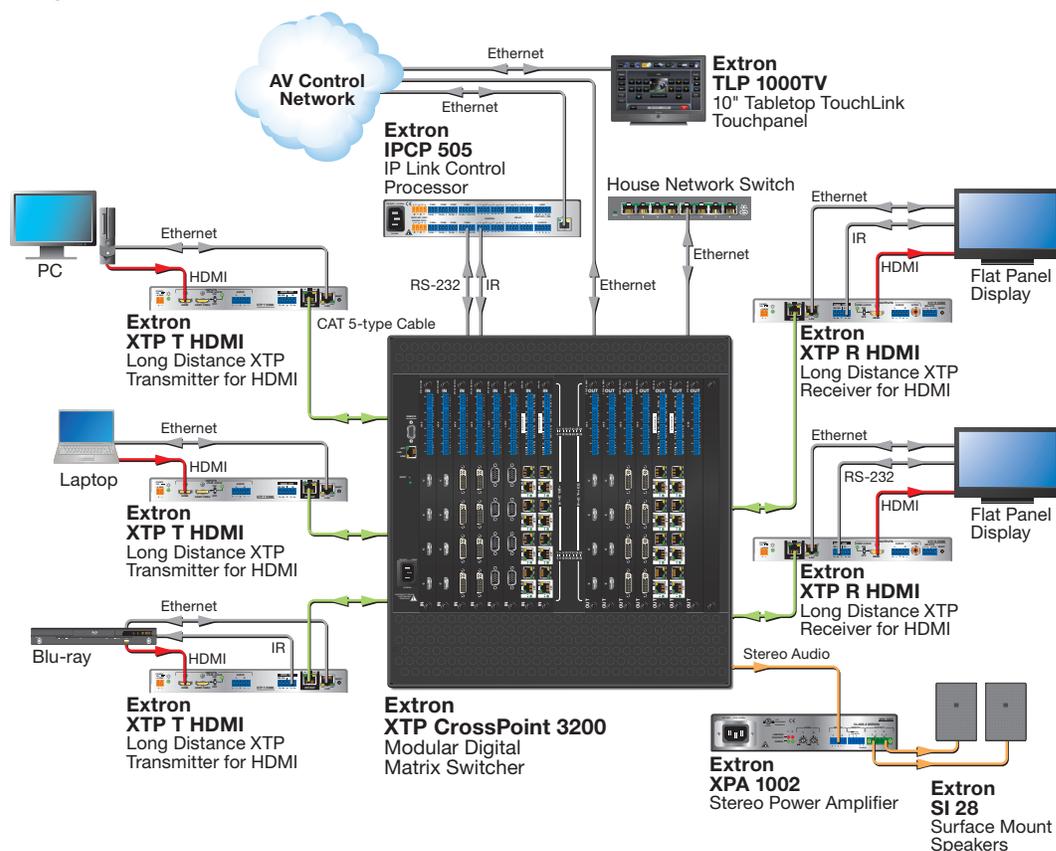
Figure 1.   Typical XTP HDMI Transmitter and Receiver Matrix Application

Key Features

Reliable cable infrastructure — Transmits or receives video, audio, bidirectional RS-232 and IR, and Ethernet up to 330 feet (100 m) over a CATx cable, providing high reliability and maximum performance on an economical and easily installed cable infrastructure.

1080p/60 Deep Color and 1920x1200 signals — Supports digital signal transmission up to 330 feet over a single twisted pair cable, maintaining superior image quality at the highest resolutions.

CAT 5e, 6, 6a, and 7 compatible — Optimized for use with common unshielded and shielded twisted pair cable types. XTP systems fully support a maximum transmission distance of 330 ft (100 m) for all compatible resolutions. Shielded twisted pair cable provides added protection from outside interference.

Bidirectional RS-232 and IR insertion — Allows a remote display to be controlled without the need for additional cabling through bidirectional RS-232 and IR control signals inserted into the XTP output.

HDMI specification features — Include data rates up to 6.75 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats.

HDCP compliance — Ensures display of content-protected media and interoperability with other HDCP-compliant devices.

EDID Minder — Automatically manages EDID communication between connected devices. It ensures that all sources power up properly and reliably outputs content for display.

Key Minder — Authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments, while enabling simultaneous distribution of a single source signal to one or more displays.

Ethernet extension — Centralized 10/100 Ethernet communication can be implemented via an Ethernet pass-through port to reduce the amount of independent network drops required within a system.

Remote power capability — To simplify integration, XTP transmitters and receivers can be powered by the XTP CrossPoint matrix switcher or XTP Power Injectors.

Multiple embedded audio formats — Compatible with a broad range of multi-channel audio signals, providing reliable operation with HDMI sources.

Transmitter HDMI loop-through with selectable audio control — Features an active HDMI output with support for embedded audio for connection to a local monitor.

Transmitter selectable analog stereo audio input embedding — Supports balanced or unbalanced audio for extended transmission by embedding stereo audio into the signal stream. This feature enables direct connection of separate stereo audio signals from a laptop, Blu-ray Disc player, or other device.

Receiver HDMI audio de-embedding with analog stereo and digital S/PDIF audio outputs — Digital HDMI audio is made available as a balanced or unbalanced analog stereo signal on captive screw connectors or a S/PDIF connector.

Installation and Operation

This section contains the installation procedures for and operation of the XTP T HDMI and the XTP R HDMI. Topics in this section include:

- **Cabling**
- **Making Connections**
- **Operation**

XTP HDMI transmitters and receivers can be mounted in a rack or under a desk or placed on a tabletop (see **Mounting** on page 29 for more mounting details).

Cabling

XTP T HDMI Rear Panel Connectors
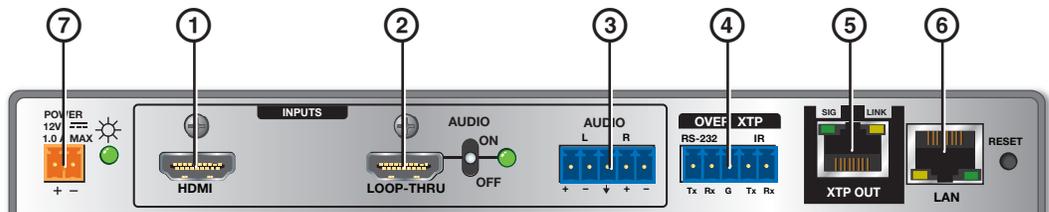
Figure 2.   XTP T HDMI Rear Panel Connectors

> **NOTES:**
> - For HDMI cables, the maximum cable length is 15 feet.
> - Use Extron LockIt lacing brackets to secure HDMI connectors to the device (see **HDMI LockIt** on page 8).
> - Video input from a DisplayPort source must be a dual mode DisplayPort source.

① **HDMI input connector** — Connect a digital video source to the female HDMI connector. It can accept HDMI, DVI (with an appropriate adaptor), or DisplayPort video signals.

② **HDMI Loop-thru connector** — Connect a digital video display to the female HDMI Loop-thru connector to locally display the input source (see **HDMI Audio Switch** on page 14 to select local audio output options). Displays that are not HDCP compliant display a green screen when HDCP encrypted content is sent to them.

③ **Analog audio inputs** — Connect a balanced or unbalanced analog audio source to the 5-pole captive screw connector for stereo analog audio input.

Balanced Audio Input   Unbalanced Audio Input

$\frac{3}{16}$" (5 mm) MAX.

Do not tin the wires!
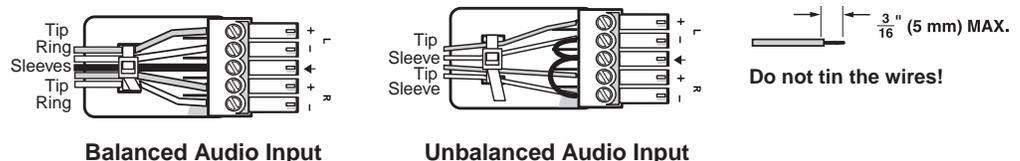
Figure 3.   Audio Input Wiring

④ **RS-232 Over XTP port** — To pass bidirectional serial, Infrared, or other control signals between XTP-compatible devices, connect a control device to the 5-pole captive screw connector. The port includes only the 3 poles labeled "RS-232."
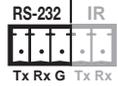
IR Over XTP port — To enable the ability to transmit and receive IR signals (up to 40 kHz), connect a control device to the 5-pole captive screw connector. This port includes only the 2 poles labeled "IR" and shares the ground pole with the RS-232 port.

> **NOTE:** RS-232 and IR data can be transmitted simultaneously (see **RS-232 and IR Communication** on page 10 for wiring details).

⑤ **XTP connector** — Connect a twisted pair cable to the RJ-45 connector labeled XTP Out and the XTP input port on another XTP device to pass all signals (see **TP Cable Termination and Recommendations** on page 9). This cable carries the following signals:

- Digital video
- Digital audio
- Bidirectional RS-232 and IR commands
- Remote power
- Ethernet communication
- System communication

The Link LED lights amber when XTP devices are connected and communication is established.

The Signal LED lights green when the transmitter outputs video signal or test pattern.

> **ATTENTION:**
> - Do not connect this connector to a computer data or telecommunications network.
> - XTP remote power is intended for indoor use only. No part of the network that uses XTP remote power should be routed outdoors (see **Remote power** on page 12).

⑥ **LAN connector** — Connect a control device or device to be controlled to the transmitter for 10/100 Ethernet communication through this pass-through port. LEDs on the connector indicate link and activity status.

⑦ **Power connector and LED** — Connect the external 12 V, 1.0 A power supply into the 2-pole captive screw connector. The Power LED lights to indicate the device is receiving power.

> **NOTE:** XTP HDMI transmitters and receivers can also be powered remotely (see **Power Connection** on page 11).

XTP R HDMI Rear Panel Connectors
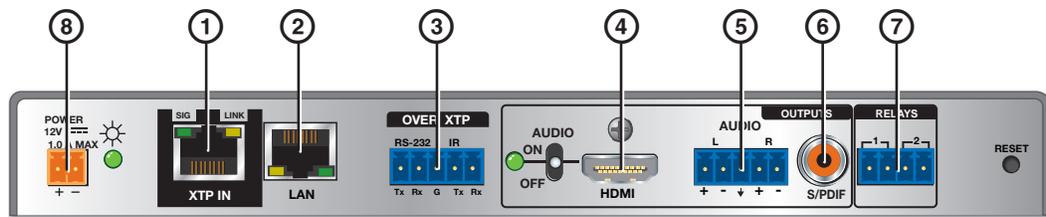
Figure 4.   XTP R HDMI Connectors

① **XTP connector** — Connect a twisted pair cable to the RJ-45 connector labeled XTP In on the receiver and to an XTP output port on another XTP device to receive all signals (see **TP Cable Termination and Recommendations** on page 9). This cable carries the following signal:

- Digital video
- Digital audio
- Bidirectional RS-232 and IR commands
- Remote power
- Ethernet communication
- System communication

The Link LED lights amber when XTP devices are connected and communication is established.

The Signal LED lights green when the receiver receives an active HDMI video signal or a test pattern from the transmitter.

> **ATTENTION:**
> - Do not connect this connector to a computer data or telecommunications network.
> - XTP remote power is intended for indoor use only. No part of the network that uses XTP remote power should be routed outdoors (see **Remote power** on page 12).

② **LAN connector** — Connect a control device or device to be controlled to the transmitter for 10/100 Ethernet communication through this pass-through port. LEDs on the connector indicate link and activity status.
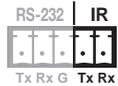
③ **RS-232 Over XTP port** — To pass bidirectional serial, Infrared, or other control signals between XTP-compatible devices, connect a control device to the 5-pole captive screw connector. The port includes only the 3 poles labeled "RS-232."
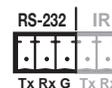
IR Over XTP port — To enable the ability to transmit and receive IR signals (up to 40 kHz), connect a control device to the 5-pole captive screw connector. This port includes only the 2 poles labeled "IR" and shares the ground pole with the RS-232 port.

> **NOTE:**   RS-232 and IR data can be transmitted simultaneously (see **RS-232 and IR Communication** on page 10 for wiring details).

④ **HDMI output** — Connect a digital video display to the female HDMI connector (see **HDMI Audio Switch** on page 14 to select local audio output options). It can accept HDMI, DVI (with an appropriate adaptor), or DisplayPort video signals.

> **NOTES:**
> - Maximum cable length is 15 ft.
> - Use Extron LockIt lacing brackets to secure HDMI connectors to the device (see **HDMI LockIt** on page 8).
> - Video input from a DisplayPort source must be a dual mode DisplayPort source.

⑤ **Analog audio output** — Connect a balanced or unbalanced, stereo or mono audio output device to the 3.5 mm, 5-pole captive screw connector for 2-channel stereo analog audio output. If the device is receiving 2-channel LPCM embedded on the HDMI input signal and digital is the selected audio input format, it is extracted and converted to a stereo analog signal.

Balanced Audio Output   **Unbalanced Audio Output**
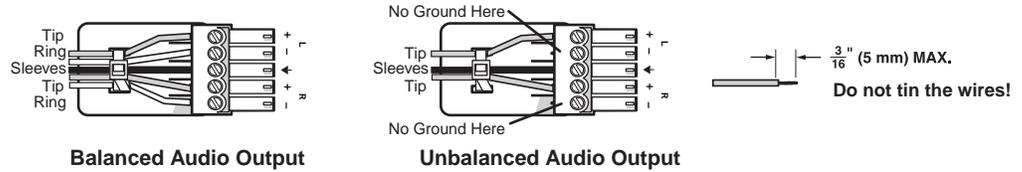
Figure 5.   Audio Output Wiring

> **ATTENTION:** For unbalanced audio, connect the sleeves to the center contact ground. Do not connect the sleeves to the negative (-) contacts.

⑥ **S/PDIF audio output** — Connect an audio device to the female orange RCA connector for digital S/PDIF audio output (see **Audio Output Overview** on page 15 for supported audio formats on the S/PDIF output). The type of audio present on this output will be dictated by the following:

- The audio format selected on the source material or device.

- The source device automatically outputting an audio format through EDID.

⑦ **Relays** — Connect equipment that can be controlled via momentary or latching contact, like as projector screens or lifts, to the normally open relays.

> **ATTENTION:** Do not exceed 24 V at 1.0 A for each port.

⑧ **Power connector and LED** — Connect the external 12 V, 1.0 A power supply to the 2-pole captive screw connector. The Power LED lights to indicate the device is receiving power.

> **NOTE:** XTP HDMI transmitters and receivers can be powered remotely (see **Power Connection** on page 11).

Front Panel Configuration Port

XTP T HDMI

XTP R HDMI
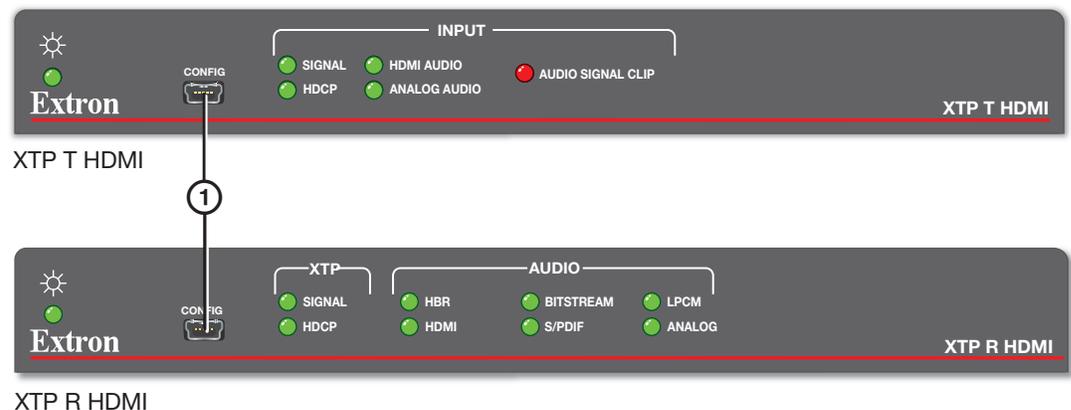
Figure 6.   Front Panel Configuration Port

① **Front Panel Config Port** — Connect a host device to the female mini-USB B port to configure the connected transmitter or receiver or update firmware.

Making Connections

HDMI LockIt

Use an Extron LockIt Lacing Bracket to secure an HDMI cable to each device as follows:

1. Plug the HDMI cable into the panel connection.
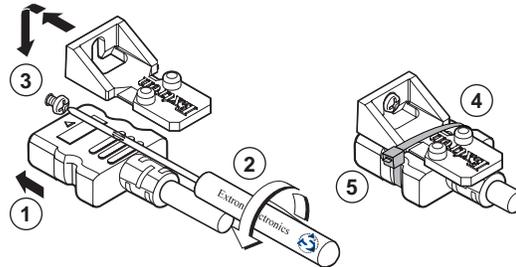
Figure 7.   **Installing the LockIt Lacing Bracket**

2. Loosen the HDMI connection mounting screw from the panel enough to allow the LockIt lacing bracket to be placed over it. The screw does not have to be removed.

3. Place the LockIt lacing bracket on the screw and against the HDMI connector, then tighten the screw to secure the bracket.

> **ATTENTION:**   Do not overtighten the HDMI connector mounting screw. The shield it fastens to is very thin and can easily be stripped.

4. Loosely place the included tie wrap around the HDMI connector and the LockIt lacing bracket (see figure 7).

5. While holding the connector securely against the lacing bracket, use pliers or similar tools to tighten the tie wrap, then remove any excess length.

TP Cable Termination and Recommendations

Use the following pin configurations for twisted pair cables.

Pins:
12345678

Insert Twisted
Pair Wires

**RJ-45
Connector**

Straight-through Cable (for connection to a switch, hub, or router)			
TIA/EIA T 568 A		**TIA/EIA T 568 B**	
Pin	Wire Color	Pin	Wire Color
1	White-green	1	White-orange
2	Green	2	Orange
3	White-orange	3	White-green
4	Blue	4	Blue
5	White-blue	5	White-blue
6	Orange	6	Green
7	White-brown	7	White-brown
8	Brown	8	Brown
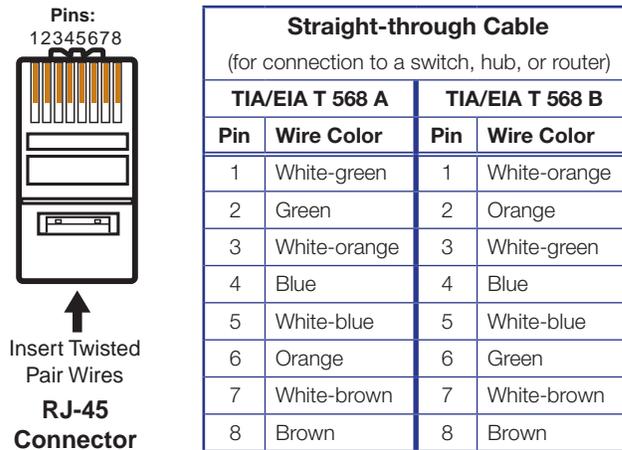
Figure 8.   TP Cable Termination

Supported cables

The XTP T HDMI and XTP R HDMI are compatible with CAT 5e, 6, 6a, and 7 shielded twisted pair (F/UTP, SF/UTP, and S/FTP) and unshielded twisted pair (U/UTP) cable.

> **ATTENTION:**
> - Do not use Extron UTP23SF-4 Enhanced Skew-Free AV UTP cable or STP201 cable to link the XTP products.
> - To ensure FCC Class A and CE compliance, STP cables and STP connectors are required.

Cable recommendations

Extron recommends using the following practices to achieve full transmission distances up to 330 feet (100 m) and reduce transmission errors.

- Use the following Extron XTP DTP 24 SF/UTP cables and connectors for the best performance:
  - **XTP DTP 24/1000**   Non-Plenum 1000' (305 m) spool   22-236-03
  - **XTP DTP 24P/1000**   Plenum 1000' (305 m) spool   22-235-03
  - **XTP DTP 24 Plug**   Package of 10   101-005-02
- If not using XTP DTP 24 cable, at a minimum, Extron recommends 24 AWG, solid conductor, STP cable with a minimum bandwidth of 400 MHz.
- Terminate cables with shielded connectors to the TIA/EIA T 568 B standard.
- Limit the use of more than two pass-through points, which may include patch points, punch down connectors, couplers, and power injectors. If these pass-through points are required, use CAT 6 or 6a shielded couplers and punch down connectors.

> **NOTE:**   When using CAT 5e or CAT 6 cable in bundles or conduits, consider the following:
> - Do not exceed 40% fill capacity in conduits.
> - Do not comb the cable for the first 20 m, where cables are straightened, aligned, and secured in tight bundles.
> - Loosely place cables and limit the use of tie wraps or hook and loop fasteners.
> - Separate twisted pair cables from AC power cables.

RS-232 and IR Communication

The RS-232 and IR Over XTP connector is for pass-through transmission of serial signals, such as projector control signals, and Infrared data (see figure 9 below for an example of how to wire the connector).
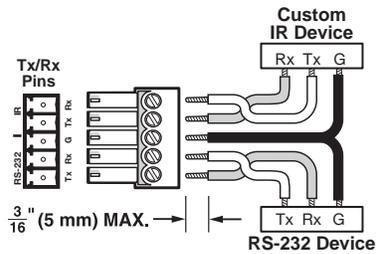
Figure 9.   Wiring the RS-232 and IR Connector

Cross the Tx and Rx lines once between the source and target.

> **ATTENTION:**   The length of exposed wires is critical. The ideal length is
> 3/16 inch (5 mm).
> - Longer bare wires can short together
> - Shorter wires are not as secure in the connectors and could be pulled out.

Power Connection

Apply power to the transmitter or receiver locally with the provided power supply or remotely with a power injector or a matrix switcher.

> **ATTENTION:** XTP remote power is intended for indoor use only. No part of the network that uses XTP remote power should be routed outdoors.

Local power
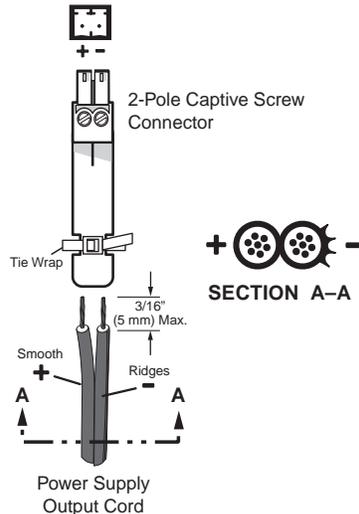
Figure 10. Power Wiring

Both the XTP T HDMI and the XTP R HDMI can be connected to a local power supply.

> **WARNING: Electric shock hazard.** The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

> **ATTENTION:**
> - This product is intended to be supplied by a Listed Power Unit marked "Class 2" or "LPS," rated 12 VDC, 1.0 A minimum. Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
> - Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to a building structure or similar structure.
> - Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord identify the power cord negative lead.
> - The length of the exposed (stripped) copper wires is important. The ideal length is 3/16 inch (5 mm).

> **TIP:** Do not tin the stripped power supply leads. Tinned wires are not as secure in the captive screw connectors. Tinned wires are not as secure in the captive screw connectors and could be pulled out.

Use the supplied tie wrap to strap the power cord to the extended tail of the connector.

Remote power

The XTP HDMI transmitter and receiver can be powered remotely through an XTP Power Injector or through an XTP matrix switcher.

> **ATTENTION:** XTP remote power is intended for indoor use only. No part of the network that uses XTP remote power should be routed outdoors.

Power injector

To power XTP HDMI transmitters and receivers remotely with an XTP Power Injector, power one device locally (see **Local power** on page 11) and connect an XTP Power Injector to the XTP cable run along the XTP ports (see the *XTP Power Injector User Guide* for more installation information).

> **NOTE:** The power injector provides remote power up to 330 feet with a CATx cable with 24 AWG wire.
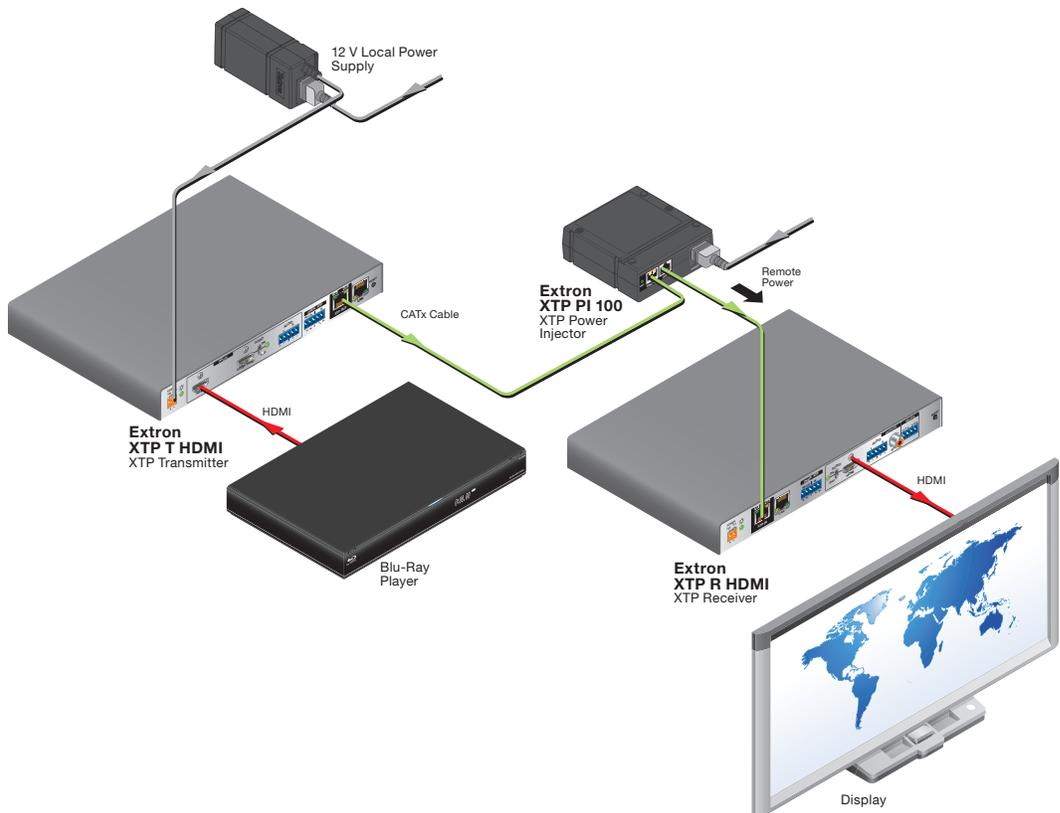
Figure 11. **Typical Point-to-Point Application with Remote Power**

Direct power from an XTP matrix switcher

XTP matrix switchers have a fixed amount of power available to provide remote power to connected XTP endpoints (refer to the user guide of the XTP matrix switcher for more details). To manage available power from the XTP matrix switcher, use the XTP System Configuration Software (see **XTP System Configuration Software** on page 23).

Operation

After all transmitters, all receivers, and their connected devices are powered up, the system is fully operational. If any problems are encountered, verify that the cables are routed and connected properly. If problems persist, call the Extron S3 Sales & Technical Support Hotline. See the contact numbers on the last page of this guide for the nearest Extron office.

XTP T HDMI Front Panel Indicators
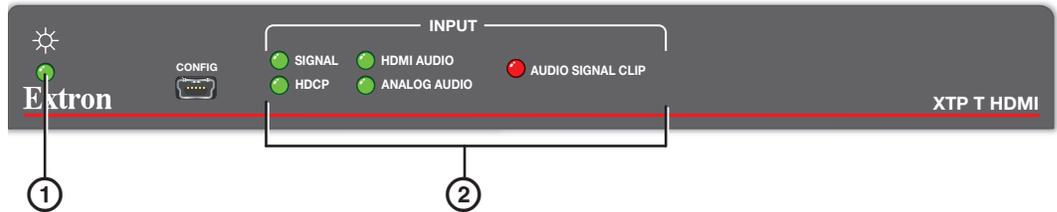
Figure 12. XTP T HDMI Front Panel Features

① **Power LED** — Lights when power is applied to the device from the power supply or remotely from an XTP Power Injector or XTP matrix switcher. There are two Power LED indicators, one on left side of the front panel and one on the left side of the rear panel.

② **Input indicators**

Signal LED — Lights when an active video signal is detected from the source.

HDCP LED — Lights when the input signal is encrypted.

HDMI Audio LED — Lights when the HDMI audio input is selected.

Analog Audio LED — Lights when the analog audio input is selected.

Audio Signal Clip LED — Lights when the analog audio input signal remains above -3 dBFS. The LED remains lit for 200 milliseconds after the signal falls below -3 dBFS.

XTP R HDMI Front Panel Indicators
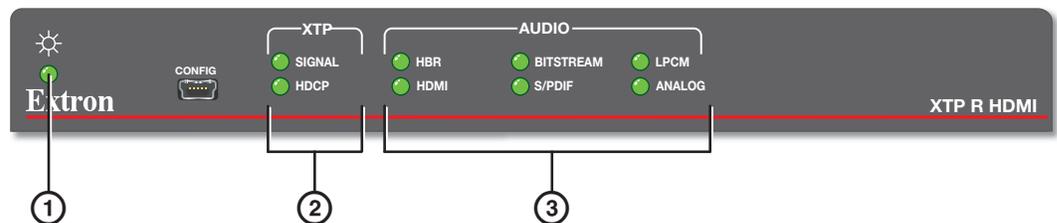
Figure 13. XTP R HDMI Front Panel Features

① **Power LED** — Lights when power is applied to the device from the power supply or remotely from an XTP Power Injector or XTP matrix switcher, such as an XTP CrossPoint. There are two Power LED indicators, one on left side of the front panel and one on the left side of the rear panel.

② **XTP indicators**

Signal LED — Lights when an active XTP input signal is received.

HDCP LED — Lights when the input signal is encrypted.

③ **Audio indicators**

HBR LED — Lights when the input audio signal is high bit rate audio.

Bitstream LED — Lights when the input audio signal is a Dolby® Digital, DTS® audio format and 2-channel Dolby.

LPCM LED — Lights when the input audio signal is LPCM-2Ch.

HDMI LED — Lights when the input audio format is multi-channel, LPCM-2Ch, or Hi-Def audio.

S/PDIF LED — Lights when the input audio format is multi-channel (except HBR), or LPCM-2Ch,

Analog LED — Lights when the input audio format is LPCM-2Ch.

HDMI Audio Switch

The XTP T HDMI and XTP R HDMI have an HDMI audio switch that mutes the embedded audio on the related HDMI connector. On the XTP T HDMI, the audio switch mutes or enables the audio on the HDMI loop-thru connector. On the XTP R HDMI, the audio switch mutes or enables the audio on the HDMI output connector. The LED next to the switch lights when HDMI audio is enabled.

Move and hold the rear panel HDMI audio switch up for about 1 second to enable embedded audio on the associated HDMI connector, or move and hold the HDMI audio switch down for about 1 second to disable embedded audio on the associated HDMI connector. The switch returns to the middle position after it has been released so the device can continue to be controlled through SIS commands.

EDID

> **NOTE:** In matrix applications, EDID on the transmitter is assigned by the matrix switcher using the XTP System Configuration Software.

The XTP T HDMI can record and save EDID in a user memory location on the transmitter. EDID can come from the loop-through display on the transmitter or the output display on the receiver (default). Connect a host device to the XTP transmitter for EDID control (see **SIS Configuration and Control** on page 16 or **XTP System Configuration Software** on page 23).

Audio Output Overview

By default, the XTP HDMI transmitter prioritizes embedded digital audio over analog audio. Use SIS commands or the XTP System Configuration Software to manually select the audio input (see **SIS Configuration and Control** on page 16 or the **XTP System Configuration Software** on page 23).

	Audio Output		
Audio Input Format	**HDMI**	**S/PDIF**	**Analog**
LPCM up to 7.1, 24 bit, 192 kHz	X	X	X
Multi-channel PCM	X		
Dolby Digital 2/0	X	X	
Dolby Digital 2/0 Surround	X	X	
Dolby Digital 5.1	X	X	
Dolby Digital EX	X	X	
Dolby Digital Plus	X		
Dolby TrueHD	X		
DTS 2 Channel	X	X	
DTS Digital Surround 5.1	X	X	
DTS-ES Matrix 6.1	X	X	
DTS-ES Discrete 6.1	X	X	
DTS-HD	X		
DTS-HD Master Audio	X		

NOTE: The transmitter uses a black signal to simulate a 720p or 1080p, 50 Hz or 60 Hz signal so audio can be passed without video.

Reset Modes

Use the recessed Reset button on the rear panel of the transmitter or receiver to return the device to default settings or to restore factory-shipped firmware.

RESET

		Reset Mode Summary		
	Mode	**Mode Activation**	**Result**	**Purpose/Notes**
Factory Reset	**1**	Hold the recessed Reset button down while applying power to the device. **NOTE:** After a mode 1 reset, update the device with the latest firmware version. DO NOT operate the firmware version that results from this mode reset.	The device reverts to the factory default firmware. **NOTE:** If you do not want to update the firmware or perform a mode 1 reset by mistake, cycle power to the device to return the firmware version running prior to the reset.	Use mode 1 to roll back to factory firmware for a single power cycle if an incompatibility issue arises.

SIS Configuration and Control

The XTP T HDMI and XTP R HDMI can be configured and controlled using Extron Simple Instruction Set (SIS) commands or the XTP System Configuration Software (see **XTP System Configuration Software** on page 23). This section contains basic SIS communication details and SIS commands and responses when connected directly to an XTP T HDMI or XTP R HDMI. Topics in this section include:

- **Host Device Connection**
- **SIS Programming Guide**
- **Command and Response Tables for Transmitter SIS Commands**
- **Command and Response Tables for Receiver SIS Commands**

Host Device Connection

Use a computer running the HyperTerminal or Extron DataViewer utility, or a control system to make serial control of the transmitter and receiver possible. To connect directly to an XTP T HDMI or XTP R HDMI, connect the computer to the XTP HDMI transmitter or receiver through the front panel USB Config port.

SIS Programming Guide

Host-to-Device and Device-to-Host Communication

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the XTP T HDMI or the XTP R HDMI determines that a command is valid, it executes the command and sends a response to the host device. All responses from the transmitter or receiver to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Error Responses

When the XTP T HDMI or the XTP R HDMI receives an SIS command and determines that it is valid, it performs the command and sends the corresponding response to the host device. If the command is determined invalid or contains invalid parameters, the transmitter or receiver returns an error response to the host. The error response codes are:

EØ1 = Invalid input number
E1Ø = Invalid command
E12 = Invalid port number
E13 = Invalid parameter
E14 = Not valid for this configuration
E17 = Invalid command for signal type
E22 = Busy

Using the Command and Response Table for SIS Commands

The command and response tables begin on page 19. Figure 14 shows the hexadecimal equivalent of ASCII characters used in the command and response tables.

NOTE: Uppercase and lowercase text can be used interchangeably unless otherwise stated.

ASCII to Hex Conversion Table										Esc	1B	CR	ØD	LF	ØA
Space →	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	l	7C	}	7D	~	7E	DEL	7F

Figure 14. ASCII to Hexadecimal Conversion

Symbol definitions

↵	=	Carriage return and line feed
¦ or ←	=	Carriage return with no line feed
•	=	Space
Esc or W	=	Escape key

X22 = EDID Emulation   See the table below

EDID Emulation Table (where X22 = the SIS value)			
SIS Value	Resolution	Refresh Rate (Hz)	Output
1	Receiver output		
2	Transmitter loop-through output		
3	800x600	60	DVI
4	1024x768	60	DVI
5	1280x720 with 2-ch audio*	60	HDMI
6	1280x768	60	DVI
7	1280x800	60	DVI
8	1280x1024	60	DVI
9	1360x768	60	DVI
1Ø	1366x768	60	DVI
11	1400x1050	60	DVI
12	1440x900	60	DVI
13	1600x1200	60	DVI
14	1680x1050	60	DVI
15	1920x1080 with 2-ch audio	60	HDMI
16	1920x1200	60	DVI
17	800x600	50	DVI
18	1024x768	50	DVI
19	1280x720 with 2-ch audio	50	HDMI
2Ø	1280x768	50	DVI
21	1280x800	50	DVI
22	1280x1024	50	DVI
23	1360x768	50	DVI
24	1366x768	50	DVI
25	1400x1050	50	DVI
26	1440x900	50	DVI

* = default

Command and Response Tables for Transmitter SIS Commands

The following commands are for direct connections to the XTP T HDMI (see to the XTP matrix switcher user guide for commands that can be sent from the matrix to endpoints).

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Audio Configuration			
Input audio format selection			
Set input audio selection	`Esc` I `X7` AFMT ←	AfmtI `X7` ↵	Set which audio input signal the transmitter will send. Auto will prioritize digital over analog audio.
View input audio selection	`Esc` IAFMT ←	AfmtI `X7` ↵	View the input audio format setting.
Audio gain and attenuation			
NOTE: Audio gain (G) and attenuation (g) are case sensitive.			
Set audio gain	`X12` G	Aud `X12` ↵	Sets audio gain on current input to `X12`.
Set audio attenuation	`X13` g	Aud `X13` ↵	Sets audio attenuation on current input to `X13`.
Increase gain	+G	Aud `X14` ↵	Increments audio level.
Decrease gain	-G	Aud `X14` ↵	Decrements audio level.
View gain	G	Aud `X14` ↵	View the audio level of the current input.
Loop-through audio mute			
Mute loop-through audio	1Z	Amt 1 ↵	Mute the embedded audio.
Unmute the loop-through audio	ØZ	Amt Ø ↵	Unmute the embedded audio.
View loop-through audio mute status	Z	Amt `X15` ↵	View the embedded audio mute status.
Black signal for audio only			
NOTE: The transmitter uses a black signal to simulate a 720p or 1080p, 50 Hz or 60 Hz signal so audio can be passed without video.			
Set black signal resolution	`Esc` A `X20` AFMT ←	AfmtA `X20` ↵	Set the black signal resolution.
View black signal resolution	`Esc` AAFMT ←	AfmtA `X20` ↵	View the current black signal resolution.
Enable black signal	`Esc` B1AFMT ←	AfmtB1 ↵	Enable the black signal for audio only.
Disable black signal	`Esc` BØAFMT ←	AfmtBØ ↵	Disable the black signal.
View black signal	`Esc` BAFMT ←	AfmtB `X2` ↵	View the black signal status.

NOTE:

`X2` = Enable or disable
- Ø = off or disable
- 1 = on or enable

`X7` = Input audio format
- Ø = auto (default)
- 1 = digital or embedded
- 2 = analog

`X12` = Audio gain — Ø - 24 = decibels above 0
`X13` = Audio attenuation — −18 - Ø = decibels below 0
`X14` = Audio level — −18 - +24 (Ø dB = default)
`X15` = Audio mute
- Ø = unmute all
- 1 = mute loop-through audio

`X20` = Black signal resolution
- 2 = 1280 x 720p, 50 Hz
- 4 = 1280 x 720p, 60 Hz (default)
- 6 = 1920 x 1080p, 60 Hz

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
EDID			
Set EDID information	`Esc` A`X22`EDID←	EdidA`X22`↵	Set the EDID resolution and refresh rate.
View EDID information	`Esc` AEDID←	EdidA`X22`↵	View the EDID resolution and refresh rate.
Advanced Configuration			
HDCP authorized device			
HDCP authorized device on	`Esc` E1HDCP←	HdcpE1↵	Set the transmitter as an HDCP authorized device.
HDCP authorized device off	`Esc` EØHDCP←	HdcpEØ↵	Set the transmitter as not an HDCP authorized device.
View HDCP authorized device setting	`Esc` EHDCP←	HdcpE`X21`↵	View the HDCP authorized device setting.
Video mute			
Mute output to black	1B	Vmt1↵	Mutes video and displays a black screen.
Unmute output	ØB	VmtØ↵	Unmute the video.
View the video mute status	B	Vmt`X8`↵	View the video mute status.
Test pattern			
Set test pattern	`X6`J	Tst`X6`↵	Set color bars test pattern to `X6`.
View test pattern	J	Tst`X6`↵	View the current test pattern.
Reset mode			
Reset to factory defaults	`Esc` ZXXX←	Zpx↵	Resets all user settings back to factory defaults.
Status			
View input signal presence	OLS	Frq`X16`↵	View the input signal presence.
Query HDCP input	`Esc` IHDCP←	HdcpI`X9`↵	Query the HDCP status.
Query firmware version	Q	x.xx↵	Query the firmware version.
Query full firmware version	*Q	x.xx.xxxx↵	Query the full firmware version.
Query part number	N	6Ø-1Ø43-12↵	Query the device part number.

NOTE:

`X6` = Color bars test pattern
- Ø = off (default)
- 1 = 1280x720p at 50 Hz
- 3 = 1280x720p at 60 Hz
- 5 = 1920x1080p at 60 Hz

`X8` = Video mute
- Ø = off or disabled
- 1 = on or enabled (mute to black)

`X9` = HDCP status
- Ø = no source connected
- 1 = HDCP-compliant source connected
- 2 = non-HDCP-compliant source connected

`X16` = Video signal status
- Ø = video or TMDS signal not detected
- 1 = video or TMDS signal detected

`X21` = HDCP authorized device status
- Ø = off
- 1 = on (default)

`X22` = EDID emulation
- See the **table** on page 18.

Command and Response Tables for Receiver SIS Commands

The following commands are for direct connection to the XTP R HDMI (refer to the XTP matrix switcher user guide for commands that can be sent from the matrix to endpoints).

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Audio Configuration			
Volume control			
Set volume	`X11`V	`Vol` `X11` ↵	Set the output volume to `X11`.
Increment volume	+V	`Vol` `X11` ↵	Increase the audio volume.
Decrement volume	-V	`Vol` `X11` ↵	Decrease the audio volume.
View volume	V	`Vol` `X11` ↵	View current volume setting.
Audio mute			
Mute all	3Z	`Amt 3` ↵	Mute the audio.
Unmute all	ØZ	`Amt Ø` ↵	Unmute the audio.
View mute status	Z	`Amt` `X15` ↵	View the mute status.
Advanced Configuration			
Relay control			
Pulse relay	`X17`*3*`X19`0	`Rly` `X18` * `X2` ↵	Pulse relay `X18` for `X19` ms.
Toggle relay	`X17`*20	`Rly` `X18` * `X2` ↵	Toggle relay `X18`.
Turn relay on	`X17`*10	`Rly` `X18` *1 ↵	Turn relay `X18` on.
Turn relay off	`X17`*Ø0	`Rly` `X18` *Ø ↵	Turn relay `X18` off.
View relay status	`X17`0	`Rly` `X18` * `X2` ↵	View the on or off status of relay `X18`.
Mute video to black			
Mute video to black	1B	`Vmt1` ↵	Mute the video and display black video.
Unmute video	ØB	`VmtØ` ↵	Unmute the video.
View video mute status	B	`Vmt` `X8` ↵	View the video mute setting.
Reset mode			
Reset to factory defaults	`Esc` ZXXX ←	`Zpx` ↵	Resets all user settings back to factory defaults.

NOTE:

`X2` = Enable or disable	Ø = off or disable 1 = on or enable
`X8` = Video mute	Ø = off or disable (default) 1 = on or enable (mute to black)
`X11` = Audio volume	Ø - 64 (64 = default)
`X15` = Audio mute	Ø = unmute all 3 = mute all
`X18` = Relay number	1 = relay 1 2 = relay 2
`X19` = Pulse time	1-65,535 (in 16 ms increments)

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Status			
View input signal presence	`ØLS`	`Frq`X16`↵`	View the input signal presence.
Query HDCP output	`Esc`OHDCP`←`	`Hdcp0`X9`↵`	Query the HDCP status.
Query firmware version	`Q`	`x.xx`↵	Query the firmware version.
Query full firmware version	`*Q`	`x.xx.xxxx`↵	Query the full firmware version.
Query part number	`N`	`6Ø-1Ø43-13`↵	Query the device part number.

NOTE:	X9 = HDCP status	Ø, 2, 4, or 6 = no output connected 1, 3, or 5 = display connected and not currently encrypted 7 = display connected and currently encrypted
	X16 = Video signal status	Ø = video or TMDS signal not detected 1 = video or TMDS signal detected

XTP System Configuration Software

This section contains installation and configuration procedures for the XTP System Configuration Software to configure and control XTP HDMI transmitters and receivers. Topics in this section include:

- **Installing the XTP System Configuration Software**
- **Using the XTP System Configuration Software**

The XTP System Configuration Software is convenient, user-friendly control software for configuring an XTP system or individual XTP devices.

Installing the XTP System Configuration Software

The program is contained on the Extron Software DVD or available for download on the Extron website, **www.extron.com**.

To install the software from the DVD:

1. To install the software, insert the DVD into the DVD drive. The Extron software DVD window should appear automatically. If it does not self-start, run Launch.exe from the DVD.

2. Click the `Software` tab, scroll to the desired program, and click `Install`.

3. Follow the instructions that appear on the screen. By default, the installation creates an Extron directory in the Program Files folder, and places four icons into a group folder named "Extron Electronics\XTP System Configuration."

To download the software from the website:

Figure 15. Extron Website Download Page

1. On the Extron website, click the `Download` tab.

2. From the left sidebar, click the `Software` link.

3. Navigate to XTP System Configuration.

4. Click the `Download` link to the right of the desired device.

5. Submit any required information to start the download. Note where the file is saved.

6. Open the executable (.exe) file from the save location.

7. Follow the instructions that appear on the screen. By default, the installation creates a directory in the Program Files folder, and places four icons into a group folder named "Extron Electronics\XTP System Configuration."

Using the XTP System Configuration Software

XTP HDMI transmitters and receivers can be controlled directly from the front panel Config port or remotely from a connected XTP matrix switcher.

Connection

When opening the XTP System Configuration Software, the Connections screen opens first. This screen is used to establish communication with an XTP device via USB (see **Front Panel Configuration Port** on page 7).

1. From the Connections screen, select the `USB` radio button.

2. Select the connected device to be controlled from the displayed list.

3. Click the `Connect` button.

Transmitter Configuration

The Device Settings screen allows a user to view and edit various device settings of the transmitter connected to the host device.

Transmitter device settings

When connected directly to an XTP T HDMI, the Device Settings screen contains configuration options for the transmitter only. Click the **Device Settings** icon on the Global Navigation bar to open the Device Settings screen.
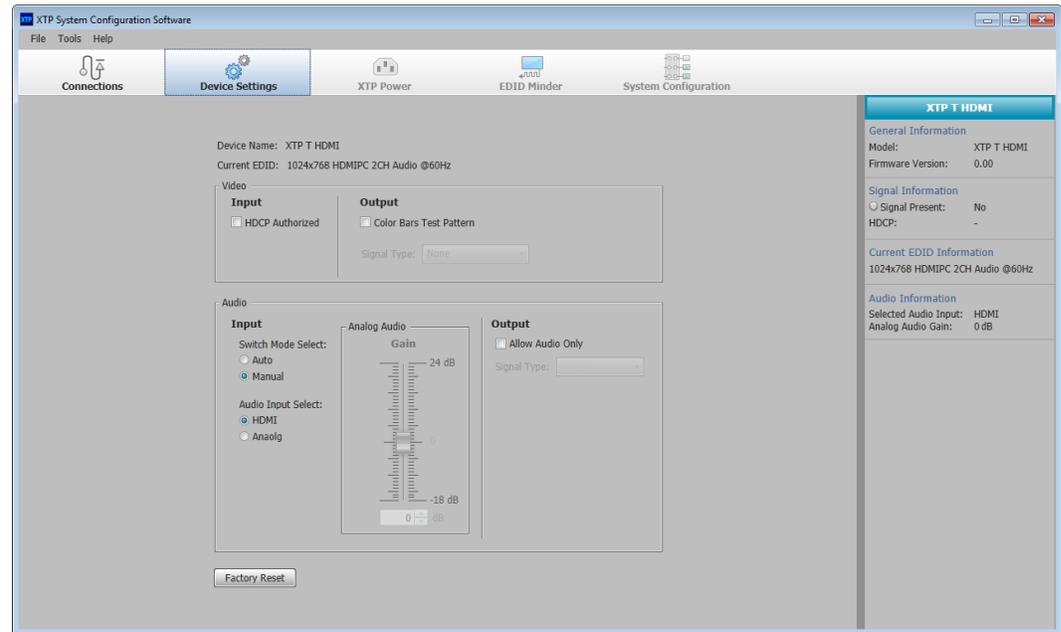
Figure 16.   Transmitter Device Settings Screen

Video panel

Video input — Select the **HDCP Authorized** check box to set the transmitter as an HDCP authorized device or deselect it to indicate that the device is not an HDCP authorized device. This is checked by default.

Video output — Select or deselect the **Color Bars Test Pattern** check box to transmit or not transmit a test pattern to an XTP receiver. This is not selected by default. If a color bars text pattern is enabled, select a signal type from the **Signal Type** drop-down list.

Audio panel

Switch mode select — Select the **Auto** radio button to enable Auto Switch mode (default). When in Auto Switch mode, HDMI audio has priority over analog audio. Select the **Manual** radio button to disable Auto Switch mode.

Audio input select — If the switch mode is set to **Manual**, select the **HDMI** radio button to transmit embedded audio from an HDMI signal or select the **Analog** radio button to transmit an analog audio signal.

Analog audio — If the transmitter transmits analog audio, move the **Analog Audio Gain** slider up or down or select the gain in the field below the slider to adjust the audio gain or attenuation in decibels.

Audio output — Select the **Allow Audio Only** check box to enable the black signal for audio-only transmission. This is not selected by default.

If enabled, select the black signal resolution from the **Signal Type** drop-down list. The default resolution is 720p @ 60 Hz.

Factory reset

Click the **Factory Reset** button to reset the transmitter to factory settings except for firmware.

> **NOTE:** This is the same as the Esc ZXXX SIS command.

EDID Minder

Use the EDID Minder screen to assign unique EDID to the input or match current output resolutions to the input. This feature is only available for the XTP transmitters. Click the **EDID Minder** icon on the global navigation bar. The EDID Minder screen opens.

The EDID Minder screen displays a table of EDID options and connected output devices, which are each represented by output display icons. Factory default EDID options are displayed in blue and connected output devices are displayed in green. Custom loaded or saved EDID options are displayed in yellow. Output resolutions are displayed in green.
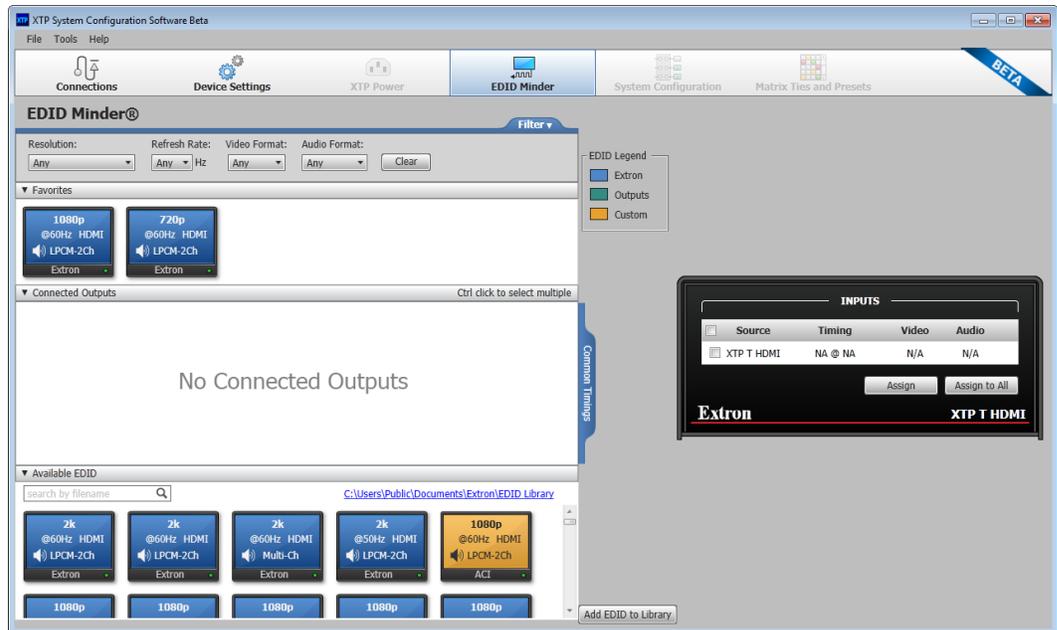
Figure 17. EDID Minder Screen

Assign EDID

1. Select an available EDID setting (represented by a blue, green, or yellow output display icon) from the Available EDID pane.

2. Select the check box of the connected input to the right of the Available EDID pane.

3. Click the **Assign** button below the input area.

> **TIP:** Alternatively, EDID can be assigned by dragging and dropping the desired EDID onto the input.

Import EDID

1. On the EDID Minder screen, click the **Add EDID to Library** button.

2. Select the desired EDID file and click **Open**. The EDID setting appears in the Available EDID pane.

3. Assign the EDID from the Available EDID pane to import the EDID setting to the device.

Save output EDID

1. On the EDID Minder screen, right-click on the desired EDID setting in the **Connected Outputs** pane.

2. Select the **Save EDID to PC** option. The EDID setting is saved to the connected PC. Alternatively, right-click on the desired EDID, select **Copy**, and then **Paste** the EDID into the desired pane.

Set favorite EDID

Commonly used EDID settings can be added to the Favorites pane for quick access.

1. Click and drag the desired EDID setting to the Favorites pane. The EDID is copied to the Favorites pane. Alternatively, right-click the desired EDID and select **Copy**. Then **Paste** the EDID setting into the Favorites pane.

EDID filters

The filters can be used to easily and quickly locate specific EDID. Selectable filters include:

- Resolution
- Refresh rate
- Audio format
- Video format

To use a filter or combination of filters:

1. Select an EDID setting from one of the drop-down lists of the associated filter. The available EDID options that match the filter selection are displayed in the Available EDID pane.

2. Repeat step 1 to apply more filters.

To clear the currently applied filters:

1. Click the **Clear** button next to the filters. All filters are reset.

Common timings

This function automatically displays available EDID settings that are common among multiple selected outputs or EDID files.

1. Hold <Ctrl> and click the desired outputs in the Connected Outputs pane. The **Common Timings** tab appears to the right of the pane, listing the EDID settings common among the selected outputs.

2. Select the desired common EDID setting. The EDID setting will be shown in the Available EDID pane.

Receiver Configuration

When connected directly to an XTP R HDMI, the Device Settings screen contains configuration options for the receiver only.
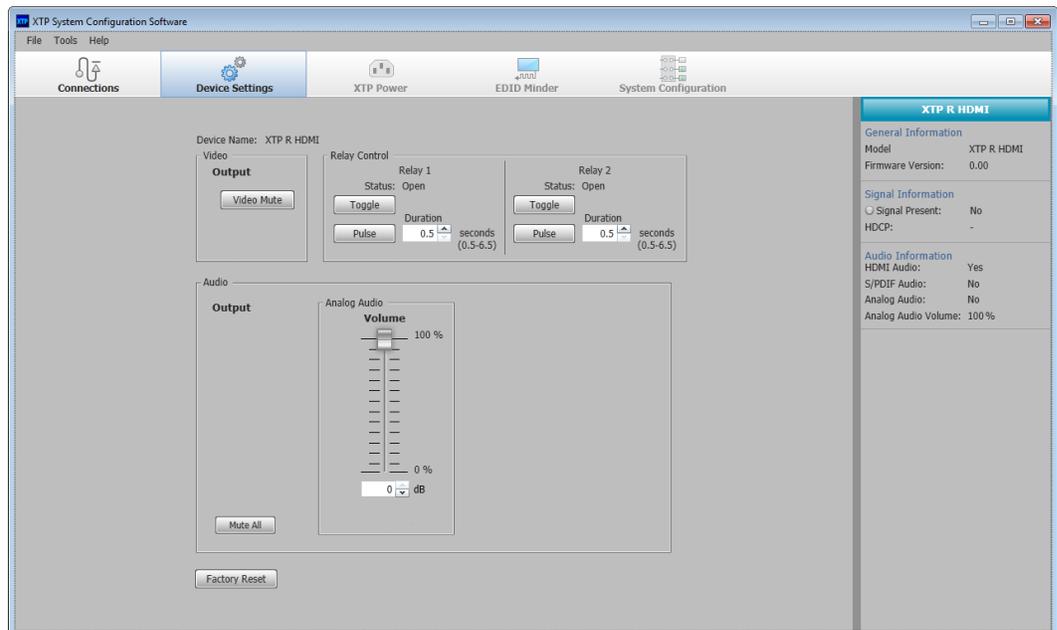

Figure 18.   Receiver Device Settings Screen

Video panel

Video mute — Click the `Video Mute` button to mute to black or unmute the video output.

> **NOTE:**   The button turns red when the video output is muted.

Relay Control panel

Toggle — Click the `Toggle` button under the desired relay section to toggle the relay.

> **NOTE:**   The Status indicator displays `Open` when the relay is open and `Closed` when the relay is closed.

Pulse — Select a length of time from the `Duration` field under the desired relay section and click the `Pulse` button to pulse the relay.

Audio panel

Mute All — Click the `Mute All` button to mute or unmute all audio outputs.

> **NOTE:**   The button turns red when the output HDMI embedded audio is muted.

Analog audio — If applicable, move the `Analog Audio Volume` slider up or down or select an amount in the field below the slider to adjust the audio volume in decibels.

Factory reset

Click the `Factory Reset` button to reset the receiver to factory settings except for firmware.

> **NOTE:**   This is the same as the `Esc` ZXXX SIS command.

Reference
Information

This section contains mounting information and instructions for updating firmware. Topics in this section include:

- **Mounting**
- **Updating Firmware with Firmware Loader**

Mounting

The XTP T HDMI and the XTP R HDMI can be placed on a tabletop or mounted in a rack or underneath a desk.

Tabletop Mounting

Attach the provided rubber feet to the bottom four corners of the enclosure.

Mounting Kits

Mount the unit using any optional compatible rack shelf or mounting kit listed on the Extron website (**www.extron.com**), in accordance with the directions included with the kit. For rack-mounting, see **UL guidelines for rack-mounted devices** below.

UL guidelines for rack-mounted devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the XTP T HDMI and XTP R HDMI in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature, Therefore, install the XTP T HDMI and XTP R HDMI in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.

2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is no compromised.

3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.

4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have an overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, the use of power strips).

Updating Firmware with Firmware Loader

To upload and update firmware for the XTP T HDMI and XTP R HDMI, download the new firmware to a connected computer and upload the firmware with the Firmware Loader utility.
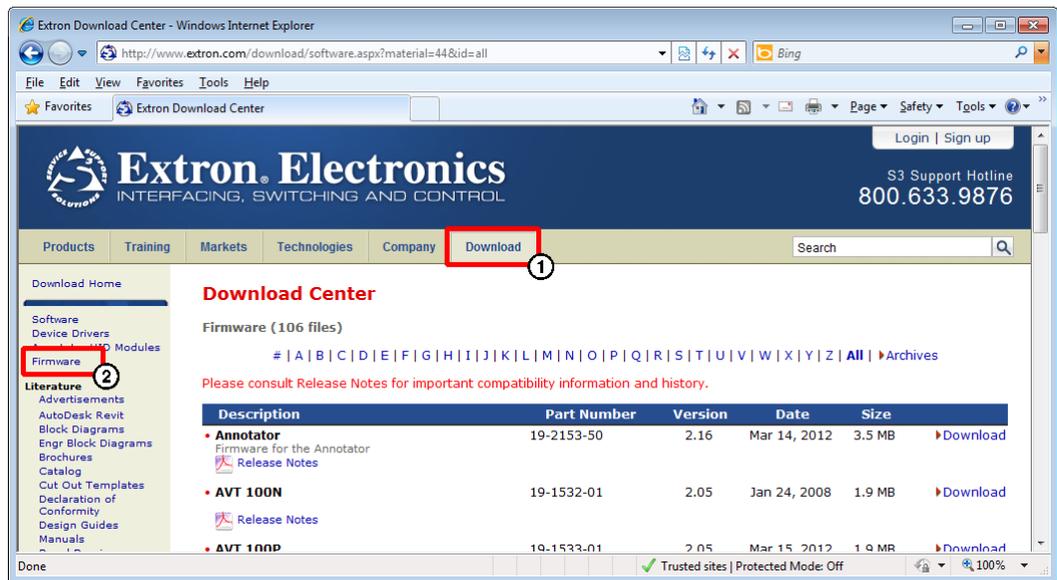
Downloading Extron Firmware Loader
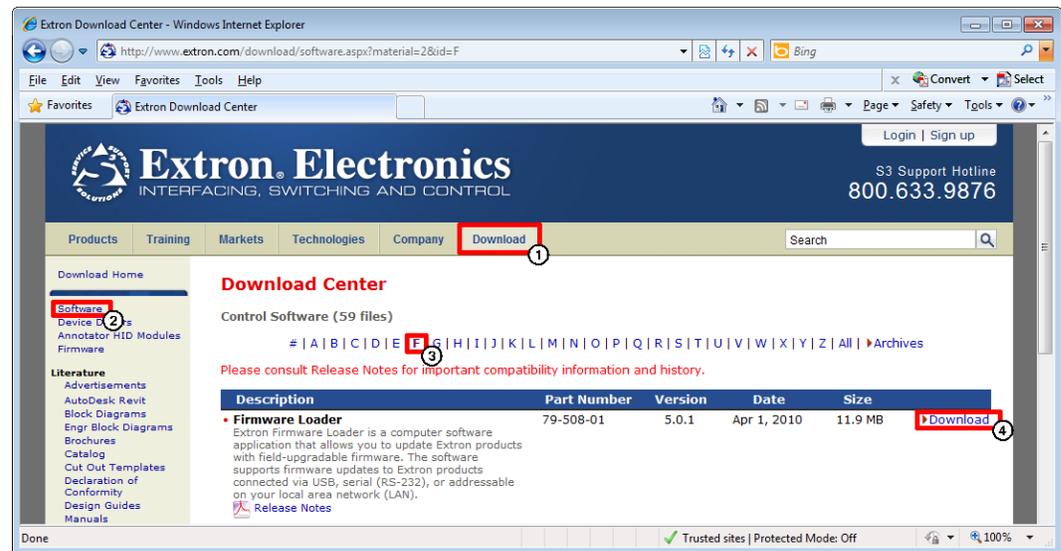
Figure 19. **Locating Firmware Loader Software on the Extron Website**

1. On the Extron website, **www.extron.com**, click the `Download` tab.

2. From the left sidebar, click the `Software` link.

3. Navigate to Firmware Loader.

4. Click the `Download` link on the right that corresponds with the program.

5. Submit any required information to start the download.

Installing Firmware Loader

1. Once Firmware Loader has been downloaded, run the .exe file from the save location. The installation wizard window opens.

2. Follow the instructions on the Installation Wizard screens to install the new firmware on the computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Downloading Firmware

**Figure 20.** **Downloading Firmware from the Extron Website**

1. On the Extron website, **www.extron.com**, click the `Download` tab.

2. On the left sidebar, click the `Firmware` link.

3. Navigate to XTP T HDMI or XTP R HDMI.

4. Ensure the available firmware version is a later version than the current one on the device.

   > **NOTE:** The firmware release notes are a PDF file that provides details about the changes between different firmware versions. The file can be downloaded from the same page as the firmware.

5. Click the `Download` link to the right of the desired device.

6. Submit any required information to start the download. Note where the file is saved.

7. Open the executable (.exe) file.

8. Follow the instructions on the Installation Wizard screens to install the new firmware on the computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Installing Firmware with Firmware Loader

1. Connect the host device to the front panel USB port.

2. Open Firmware Loader and establish a connection between the computer and the device. The Add Device... dialog box opens.
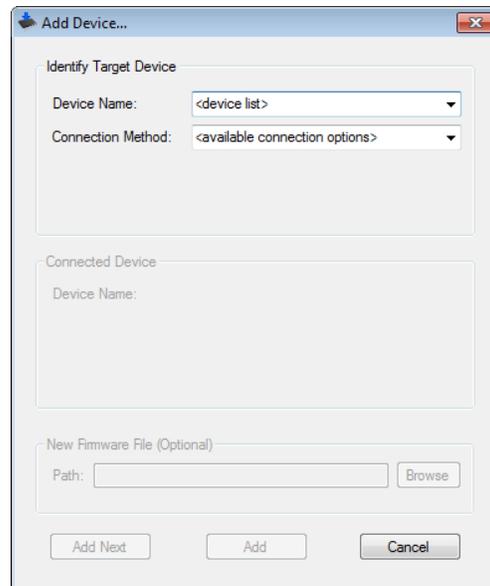
Figure 21. **Add Device... Dialog Box**

3. Select XTP T HDMI or XTP R HMDI from the **Device Name** drop-down list.

4. Select the method of connection from the **Connection Method** drop-down list.

5. Depending on the connection method, additional options appear. Make the appropriate selections for the current connection method.

6. Click **Connect**.

7. Click **Browse** in the New File Firmware (Optional) section.

8. On the Open dialog box, select the new firmware file, which has an .S19 extension, and click **Open**.

> **ATTENTION:** Valid firmware files must have the file extension .S19. A file with any other extension is not a firmware upgrade for this device and could cause the device to stop functioning.

9. Click **Add**. The Add Device... dialog box closes and the device and firmware are listed in the Firmware Loader main window.

10. Click **Begin** to start the upload process.

11. Close Firmware Loader when the **Remaining Time** field shows ØØ.ØØ.ØØ, the **Progress** column is 1ØØ%, and the **Status** field is completed.

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America,
and Central America:
Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Europe and Africa:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

Asia:
Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

> **NOTE:** If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.
>
> **USA**: 714.491.1500 or 800.633.9876   **Europe**: 31.33.453.4040
> **Asia**: 65.6383.4400   **Japan**: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.